

REMARKS

Claims 1 through 23 are currently pending in the application.

Claims 7 through 12 and 19 through 23 are withdrawn from consideration as being directed to a non-elected invention.

Claims 1 through 6 and 13 through 18 currently stand rejected.

This amendment is in response to the Office Action of May 6, 2003.

Applicant notes the filing of a Preliminary Amendment on August 13, 2001, which filing was not acknowledged in the outstanding Office Action. Should the Preliminary Amendment have failed to have been entered in the Office file, Applicant will provide a true copy to the Examiner.

Applicant hereby affirms the election to prosecute, without traverse of the Restriction Requirement. the inventions of Group I, claims 1 through 6 and 13 through 18.

Rejection Under 35 U.S.C. § 102(a)

Claims 1, 3, 4, 13, 15 and 16 are rejected under 35 U.S.C. § 102(a) as being anticipated by Taniguchi et al. (U.S. Patent No. 6,221,690).

Applicant submits that a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.

Verdegaal Brothers v. Union Oil Co. of California, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Taniguchi describes a semiconductor package and production method thereof. Specifically, Taniguchi describes a semiconductor package production method where a solder resist 3 is formed on the top surface side of a BGA (ball and grid array) substrate (col. 3, lines 35-36). This solder resist is preferably one that can be removed by a laser (col. 4, line 40-42). The laser can be selected from the fundamental wave of a YAG laser, the second harmonic, the third harmonic, and fourth harmonic of the YAG laser, an excimer laser, and so on (col. 5, lines 47-51). Lastly, an encapsulating resin can be used to encapsulate the substrate (col. 6, lines 57+).

Applicant respectfully submits that in light of presently amended independent claims 1 and 13, Taniguchi does not and cannot anticipate presently amended independent claims 1 and 13 under 35 U.S.C. § 102 because it fails to describe, either expressly or inherently, each and every element as set forth in the claims.

Presently amended independent claim 1 is clearly directed to an embodiment having elements of the claimed invention calling for a “resist removal method for use in an automolding system comprising . . . providing an automolding system having a laser . . . providing a substrate having a surface . . . forming resist on at least a portion of the surface . . . and removing at least a portion of the resist from the substrate using the laser”.

It is respectfully submitted that Taniguchi lacks any express or inherent description of an automolding system in association with a laser to remove resist from a substrate. While Taniguchi describes the use of a laser to remove resist from a substrate, it fails to describe an automolding system having such laser.

For this reason, it is respectfully submitted that, under 35 U.S.C. §102(a), presently amended independent claim 1 is allowable.

It is respectfully submitted that dependent claims 3 and 4 are allowable as depending from allowable base claim 1, in addition for any patentable subject matter contained therein. See *In re Fine*, 837 F.2d 1071, 5 USPQ.2d 1596 (Fed. Cir. 1988).

Presently amended independent claim 13 is directed to an embodiment of the invention having elements of the invention calling for a “method of fabricating a semiconductor device in an automolding system comprising . . . providing an automolding system having a laser for etching resist from the surface of a substrate . . . providing a substrate having a surface . . . ;forming resist on at least a portion of the surface . . . laser etching the resist from at least a portion of the surface of the substrate . . . and encapsulating the substrate”.

Applicant respectfully submits that Taniguchi fails to expressly or inherently describe each and every element of independent claim 13. Specifically, Taniguchi fails to describe a method comprising providing an automolding system having a laser etching the resist from the surface of the substrate.

Thus, it is respectfully submitted that, under 35 U.S.C. §102(a), presently amended independent claim 13 is allowable.

It is also respectfully submitted that dependent claims 15 and 16 are each allowable as depending from allowable base claim 13, in addition for any patentable subject matter contained therein.

Rejections Under 35 U.S.C. § 103(a)

Applicant submits that to establish a *prima facie* case of obviousness under 35 U.S.C. § 103 three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Third, the cited prior art reference must teach or suggest all of the claim limitations. Furthermore, the suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on Applicant's disclosure.

Taniguchi and Freyman

Claims 2 and 14 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Taniguchi et al. (U.S. Patent 6,221,690) in view of Freyman et al. (U.S. Patent 6,329,606).

Claims 2 and 14 have been cancelled. The subject matter of claims 2 and 14 has been merged into independent claims 1 and 13, respectively.

Taniguchi teaches or suggests a semiconductor package production method where a solder resist 3 is formed on the top surface side of a BGA substrate (col. 3, lines 35-36). This solder resist is preferably one that can be removed by a laser (col. 4, line 40-42). The laser can be selected from the fundamental wave of a YAG laser, the second harmonic, the third harmonic, and fourth harmonic of the YAG laser, an excimer laser, and so on (col. 5, lines 47-51). Freyman teaches or describes an invention that allows for standard automolding of printed circuit boards (col. 4, lines 25-26).

Presently amended independent claim 1 is clearly directed to an embodiment having elements of the claimed invention calling for a “resist removal method for use in an automolding system comprising . . . providing an automolding system having a laser . . . providing a substrate having a surface . . . forming resist on at least a portion of the surface . . . and removing at least a portion of the resist from the substrate using the laser”.

Applicant respectfully submits there is no suggestion or motivation, either in Freyman or Taniguchi, or in the knowledge generally available to one of ordinary skill in the art, to modify either reference or to combine reference teachings to form the claimed invention to establish a *prima facie* case of obviousness regarding the claimed invention under 35 U.S.C. 103. Taniguchi does not suggest or provide evidence showing that its teachings, when combined with an automolding system, would provide a more efficient automation in manufacture; nor does Freyman suggest or hint that combining with the teachings of Taniguchi will provide a more efficient automation in manufacture. Applicant respectfully submits that such analysis is merely hindsight analysis and is improper. There is no suggestion, other than solely in Applicant's specification, that the combined teachings of Taniguchi and Freyman will have a reasonable expectation of success. Additionally, the only suggestion to combine the teachings of Taniguchi and Freyman is in Applicant's specification, which thing cannot be relied upon to form an obviousness rejection. Such a rejection is neither within the ambit nor purview of 35 U.S.C. § 103 and cannot establish a *prima facie* case of obviousness regarding the claimed invention under 35 U.S.C. 103.

For these reasons, Applicant respectfully submits that, under 35 U.S.C. § 103, presently amended independent claim 1 is allowable over the combination of Taniguchi and Freyman because, at the very least, there is no suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings to establish a *prima facie* case of obviousness regarding the claimed invention under 35 U.S.C. 103.

Presently amended independent claim 13 is directed to an embodiment of the invention having elements of the invention calling for a “method of fabricating a semiconductor device in an automolding system comprising . . . providing an automolding system having a laser for

etching resist from the surface of a substrate . . . providing a substrate having a surface . . . ;forming resist on at least a portion of the surface . . . laser etching the resist from at least a portion of the surface of the substrate . . . and encapsulating the substrate”.

Taniguchi teaches or suggest a semiconductor package production method where a solder resist 3 is formed on the top surface side of a BGA substrate (col. 3, lines 35-36). This solder resist is preferably one that can be removed by a laser (col. 4, line 40-42). The laser can be selected from the fundamental wave of a YAG laser, the second harmonic, the third harmonic, and fourth harmonic of the YAG laser, an excimer laser, and so on (col. 5, lines 47-51). Lastly, an encapsulating resin can be used to encapsulate the substrate (col. 6, lines 57+). Freyman teaches or suggests an invention that allows for standard automolding of printed circuit boards.

It is respectfully submitted that there is no suggestion or motivation, either in Freyman or Taniguchi, or in the knowledge generally available to one of ordinary skill in the art, to modify either reference or to combine reference teachings to establish a *prima facie* case of obviousness regarding the claimed invention under 35 U.S.C. 103. Taniguchi does not suggest or provide evidence showing that its teachings, when combined with an automolding system, would provide a more efficient automation in manufacture; nor does Freyman suggest or imply that combining with the teachings of Taniguchi will provide a more efficient automation in manufacture. Applicant respectfully submits that such analysis is improper hindsight analysis. Further, there is no suggestion, other than in Applicant’s specification, that the combined teachings of Taniguchi and Freyman will have a reasonable expectation of success. In addition, the only suggestion to combine the teachings of Taniguchi and Freyman is in Applicant’s specification, which thing cannot be relied upon to form an obviousness rejection to establish a *prima facie* case of obviousness regarding the claimed invention under 35 U.S.C. 103. Such a rejection is neither within the ambit nor purview of 35 U.S.C. § 103 and, clearly, improper.

For these reasons, Applicant respectfully submits that, under 35 U.S.C. § 103(a), presently amended independent claim 13 is allowable over the combination of Taniguchi and Freyman because, at the very least, there is no suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify

the reference or to combine reference teachings to establish a *prima facie* case of obviousness regarding the claimed invention under 35 U.S.C. 103(a).

Taniguchi and Rumsey

Claims 5, 6, 17 and 18 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Taniguchi et al. (U.S. Patent 6,221,690) in view of Rumsey (U.S. Patent 6,415,977).

Taniguchi teaches or suggests a semiconductor package production method where a solder resist 3 is formed on the top surface side of a BGA substrate (col. 3, lines 35-36). This solder resist is preferably one that can be removed by a laser (col. 4, line 40-42). The laser can be selected from the fundamental wave of a YAG laser, the second harmonic, the third harmonic, and fourth harmonic of the YAG laser, an excimer laser, and so on (col. 5, lines 47-51).

Rumsey teaches or suggests a method and apparatus for marking and identifying defective die sites. In particular, Rumsey teaches the use of vision systems associated with automated machine handling and semiconductor die placement apparatus (col. 2, lines 12-14). This vision system may include a laser scanning system (col. 10, lines 3-8). Rumsey also teaches a vision system that recognizes patterns in the substrate and defects therein (col. 4, lines 18-21).

Presently amended independent claim 1 is clearly directed to an embodiment having elements of the claimed invention calling for a "resist removal method for use in an automolding system comprising . . . providing an automolding system having a laser . . . providing a substrate having a surface . . . forming resist on at least a portion of the surface . . . and removing at least a portion of the resist from the substrate using the laser".

Dependent claim 5 requires the method according to claim 1 further comprising a vision system for detecting resist.

Dependent claim 6 claims the method according to claim 5 wherein said vision system comprises providing a laser scanning system and detecting changes in a pattern of the substrate.

Applicant respectfully submits that claims 5 and 6 are allowable as depending from allowable base claim 1, in addition to any patentable subject matter contained therein.

The combined teachings of Taniguchi and Rumsey fail to teach or suggest all the claim limitations required by presently amended independent claim 1 to establish a *prima facie* case of

obviousness regarding the claimed invention under 35 U.S.C. 103(a).. Specifically, the references fail to teach or suggest a resist removal method for use in an automolding system comprising providing an automolding system having a laser.

Additionally, there is no motivation or suggestion, in either reference or in the knowledge generally available to one of ordinary skill in the art, to modify a reference or combine reference teachings to provide for a more efficient automation quality manufacture in accordance with Applicant's claimed invention to establish a *prima facie* case of obviousness regarding the claimed invention under 35 U.S.C. 103(a).. Nor is there teaching that a combination of references to form the claimed invention will have a reasonable expectation of success to establish a *prima facie* case of obviousness regarding the claimed invention under 35 U.S.C. 103(a).. Further, the only suggestion to combine the teachings of Taniguchi and Rumsey is in Applicant's specification, which thing cannot be relied upon to form an obviousness rejection to establish a *prima facie* case of obviousness regarding the claimed invention under 35 U.S.C. 103.

Therefore, it is respectfully submitted that, under 35 U.S.C. § 103(a), presently amended independent claim 1, and further, dependent claims 5 and 6, are allowable over the combination of Taniguchi and Rumsey because at the very least, the combined references do not teach or suggest all the claim limitations of the claimed invention to establish a *prima facie* case of obviousness under 35 U.S.C. § 103.

Presently amended independent claim 13 is directed to an embodiment of the invention having elements of the invention calling for a "method of fabricating a semiconductor device in an automolding system comprising . . . providing an automolding system having a laser for etching resist from the surface of a substrate . . . providing a substrate having a surface . . . ;forming resist on at least a portion of the surface . . . laser etching the resist from at least a portion of the surface of the substrate . . . and encapsulating the substrate".

Dependent claim 17 states the method according to claim 13 further comprising a vision system for detecting resist.

Dependent claim 18 claims the method according to claim 17 wherein said vision system comprises providing a laser scanning system and detecting changes in a pattern of the substrate.

Taniguchi teaches or suggests a semiconductor package production method where a solder resist 3 is formed on the top surface side of a BGA substrate (col. 3, lines 35-36). This solder resist is preferably one that can be removed by a laser (col. 4, line 40-42). The laser can be selected from the fundamental wave of a YAG laser, the second harmonic, the third harmonic, and fourth harmonic of the YAG laser, an excimer laser, and so on (col. 5, lines 47-51). Lastly, an encapsulating resin can be used to encapsulate the substrate (col. 6, lines 57+).

Rumsey teaches or suggests a method and apparatus for marking and identifying defective die sites. In particular, Rumsey teaches the use of vision systems associated with automated machine handling and semiconductor die placement apparatus (col. 2, lines 12-14). This vision system may include a laser scanning system (col. 10, lines 3-8). Rumsey also teaches a vision system that recognizes patterns in the substrate and defects therein (col. 4, lines 18-21).

Applicant respectfully submits that dependent claims 17 and 18 are allowable as depending from allowable base claim 13, in addition to any patentable subject matter contained therein.

The combined teachings of Taniguchi and Rumsey fail to teach or suggest all the claim limitations required by independent claim 13 to establish a *prima facie* case of obviousness regarding the claimed invention under 35 U.S.C. 103. Specifically, the references fail to teach or suggest a method comprising an automolding system having a laser etching the resist from the surface of the substrate.

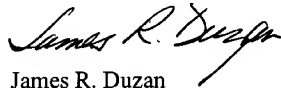
Additionally, there is no motivation or suggestion, in either reference or in the knowledge generally available to one of ordinary skill in the art, to modify a reference or combine reference teachings to provide for a more efficient automation quality manufacture in accordance with Applicant's claimed invention to establish a *prima facie* case of obviousness regarding the claimed invention under 35 U.S.C. 103. Nor is there teaching that a combination of references to form the claimed invention will have a reasonable expectation of success to establish a *prima facie* case of obviousness regarding the claimed invention under 35 U.S.C. 103. Further, the only suggestion to combine the teachings of Taniguchi and Rumsey is in Applicant's specification, which thing cannot be relied upon to form an obviousness rejection to establish a *prima facie* case of obviousness regarding the claimed invention under 35 U.S.C. 103.

Therefore, it is respectfully submitted that, under 35 U.S.C. § 103(a), independent claim 13, and further, dependent claims 17 and 18, are allowable over the combination of Taniguchi and Rumsey because at the very least, the combined references do not teach or suggest all the claim limitations of the claimed invention to establish a *prima facie* case of obviousness under 35 U.S.C. § 103.

CONCLUSION

It is respectfully submitted that each of claims 1 through 6 and 13 through 18 is allowable. An early notice showing allowance of each of these claims is respectfully solicited, as is an indication that the above-referenced application has been passed for issuance. If any issues preventing allowance of the above-referenced application remain which might be resolved by way of a telephone conference, the Office is kindly invite to contact the undersigned attorney.

Respectfully submitted,



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